EAGLE EYE POWER SOLUTIONS

Battery Monitoring for NERC Compliance

EE-NERC-BMS Cabinet Solution

The EE-NERC-BMS is Eagle Eye's complete battery monitoring solution for NERC PRC-005-6 compliance. This standard requires utilities to document and implement programs for the maintenance of all protection systems affecting the reliability of the bulk electric system (BES).

Under NERC PRC-005-6, battery maintenance falls under Table 1-4(f) *"Exclusions for Protection System Station DC Supply Monitoring Devices and Systems" with no maximum maintenance interval.* This table outlines the monitoring and alarming requirements needed to alleviate periodic maintenance activities.

Eagle Eye offers solutions to meet each of these requirements as highlighted below:

NERC PRC-005-6 -Table 1-4(f)

"Exclusions for Protection System Station DC Supply Monitoring Devices and Systems"
*Maximum Maintenance Interval: No periodic maintenance specified

Eagle Eye Solution	NERC Requirement Attributes	Maintenance Activities
✓ Satisfies	Any station dc supply with **high and low voltage monitoring** and alarming of the battery charger voltage to detect charger overvoltage and charger failure.	No periodic verification of station dc supply voltage is required.
✓ Satisfies	Any battery based station DC supply with **electrolyte level monitoring and alarming in every cell**.	No periodic inspection of the electrolyte level for each cell is required.
✓ Satisfies	Any station DC supply with **unintentional DC ground monitoring and alarming.**	No periodic inspection of unintentional DC grounds is required.
✓ Satisfies	Any station DC supply with charger **float voltage monitoring and alarming** to ensure correct float voltage is being applied on the station DC supply.	No periodic verification of float voltage of battery charger is required.
✓ Satisfies	Any battery based station DC supply with **monitoring and alarming of battery string continuity**.	No periodic verification of the battery continuity is required.
✓ Satisfies	Any battery based station DC supply with **monitoring and alarming of the intercell and/or terminal connection detail resistance** of the entire battery.	No periodic verification of the intercell and terminal connection resistance is required.
✓ Satisfies	Any Valve Regulated Lead-Acid (VRLA) or Vented Lead-Acid (VLA) station battery with **internal ohmic value or float current monitoring and alarming**, and evaluating present values relative to baseline internal ohmic values for every cell/unit.	No periodic evaluation relative to baseline of battery cell/unit measurements indicative of battery performance is required to verify the station battery can perform as manufactured.
✓ Satisfies	Any Valve Regulated Lead-Acid (VRLA) or Vented Lead-Acid (VLA) station battery with **monitoring and alarming of each cell/unit internal ohmic value.**	No periodic inspection of the condition of all individual units by measuring battery cell/unit internal ohmic values of a station VRLA or Vented Lead-Acid (VLA) battery is required.

Key Benefits

- Real-time monitoring eliminates required on-site maintenance such as routine manual battery testing
- Included battery management software allows remote monitoring and alarming
- Generate reports and view historical measurement data at any time, such as during a NERC audit
- Available in an industrial enclosure
- Installation can be performed while the system is online, eliminating the need to de-energize the system

Battery Management Software

- Measure: string voltage, current, cell/unit voltage, internal/connection resistance, cell/unit & ambient temperature, electrolyte level, ground fault
- Alarming for all measured parameters
- Trending analysis of measured parameters on a string and cell/unit level with colored, easy to read graphs
- PDF and Excel reporting
- Record, save, & playback discharge events
- Customize components based on needs, such as electrolyte level and ground fault monitoring

Technical Specifications	
Measurement Range:	Battery Capacity: 5 – 6,000 Ah System Voltage: 0 – 576 VDC Cell/Unit Voltage: 2, 4, 12 Volts Current: ±10,000 A Temperature: 0 – 80°C (32 – 176°F)
Accuracy / Resolution:	System Voltage: ±0.5% / 0.1 V Current: ±2% / 0.1 A Cell/Unit Voltage: ±0.5% / 0.01 V Internal/Conn. Resistance: ±2% / 0.001 mΩ Unit Temperature: ±2% / 0.01 ° Electrolyte Level: ±2 mm (± 0.08”) above or below line
Communication:	TCP/IP to Proprietary Software, TCP/IP Modbus
External Alarming:	Form C Contact
Operating Environment:	Temperature: 0 – 55°C (32 – 131°F) Humidity: 0 – 80% RH
Power Requirements:	Input: 43 – 250 VDC / 110 – 220 VAC
Enclosure Specifications:	NEMA 4/12/13, 20 x 20 x 6 in (HxWxD), wall mount, carbon steel, ANSI 61 gray, light-textured polyester powder finish, single-door, 1/4-turn semi-flush oil-tight latch, polycarbonate window

Ordering Information

Model No.	Description
EE-NERC-BMS	Battery Monitoring Solution for NERC PRC-005-6